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Date: August 16, 2005

Docket No: ATOTP0104US

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

Applicant: Nayan Joshi, et al

Examiner: M.B. Cleveland

Serial No.: 10/606,460

Art Unit: 1762

Filing Date: June 26, 2003

Confirmation No. 3492

Title: **AQUEOUS ACIDIC IMMERSION PLATING SOLUTIONS AND METHODS FOR PLATING ON ALUMINUM AND ALUMINUM ALLOYS**

PRE-APPEAL BRIEF REQUEST FOR REVIEW

VIA FACSIMILE
M/S AF
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

**AFTER FINAL
COMMUNICATION
Expedited Handling
Requested**

Sir:

The present PRE-APPEAL BRIEF REQUEST FOR REVIEW is filed together with Applicants' Notice of Appeal pursuant to the procedure providing for such pre-appeal brief review of a final rejection when such request is filed simultaneously with Applicants' Notice of Appeal. The present paper and Notice of Appeal are filed in response to the Office Action mailed 18 May 2005, for which a three month time for reply was set. Accordingly, Applicants' Reply is timely filed. Applicants respectfully request review and reversal of the final rejection of Applicants' claims based on the previously submitted

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evidence and arguments, together with the following additional points. Applicants hereby incorporate herein by reference the facts and arguments set forth in Applicants' previous Replies to Office Action. Applicants note that the Notice of Appeal and the following remarks are directed to the claims pending in the final Office action, not to the claims submitted in Applicants' non-entered after-final submission filed on 29 July 2005.

REMARKS

Claims 28-31, 36-42 and 50-72 are pending in the application. Claims 1-27, 32-35 and 43-49 were cancelled previously.

The Examiner has rejected the claims over Eckles, US 5405523 and Suzuki, US 4888218, as the primary references. The Examiner contended that because Eckles teaches a zinc alloy electropating process using a bath containing components similar to those in Applicants' immersion plating bath, in which the substrate to be plated is immersed in the electroplating bath (thus constituting "immersion" plating), and Suzuki teaches an aluminum substrate, the claimed invention would have been obvious. The rejections are based on a clearly erroneous view of the facts. Very simply stated, the claimed process uses an immersion plating bath and applies an immersion plated coating of a zinc alloy protective coating, and this immersion plating is not electroplating, it is not a species of electroplating and it is not inherent in electroplating.

The Examiner's clearly erroneous view was originally based on the Examiner's now-admitted mistaken understanding of the term "immersion plating". Because this "understanding" was so clearly erroneous, Applicants simply argued that no person of any skill in the art would make the contentions made by the Examiner, that any such person would clearly know and understand the difference between immersion plating and electroplating in response to the first Office action,

In the face of the Examiner's refusal to withdraw the rejections in the face of these facts, Applicants submitted irrefutable evidence of the understanding in the art of the differences between these processes. These submissions were made after final rejection, on July 11, 2005. Applicants could not have submitted this evidence sooner, having had no idea that the Examiner could possibly maintain such a clearly erroneous position.

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However, in maintaining the rejections, in the Advisory action mailed 22 July, the Examiner fell back on the contention that

Applicants' remark that the term "electroplating" is completely distinct from "immersion plating" is found to be imprecise because electroplating may include immersion plating (see, e.g., Kowalski (U.S. Patent 3,928,147, col. 1, lines 27-39) and because displacement plating is a species of electroplating (See, e.g., Young, U.S. Patent 4,686,017, Abstract, and the classification schedule of class 205....

In the telephone interview of 28 July, the Examiner admitted that he had not appreciated the differences between immersion plating and electroplating. Thus, the reason for the final rejection is due to the Examiner's admitted lack of knowledge of the art in the first Office action. But, rather than withdraw the factually unsupported rejections, the Examiner maintained his position that the claimed "immersing an ... substrate in ... an immersion plating solution" was insufficient to distinguish the contended combination of references.

Thus, the Examiner continues to contend that electroplating *may* include immersion plating - that is, that immersion plating *may be* inherent in electroplating. This is clearly erroneous since for anything to be inherent, the missing disclosure *must, not may*, be present, as discussed in more detail below.

Additionally, the Examiner continues to contend that immersion plating is a species of electroplating. This, too, is clearly erroneous as is shown below.

Immersion Plating Is Neither Inherent In Nor a Species of Electroplating

Both of the views stated by the Examiner in the July 28 interview and quoted above are factually incorrect and clearly erroneous. As such, they cannot form the basis for an obviousness rejection.

The term "electrolytic plating" is a general term applicable to any kind of plating that involves the transfer of electrons as part of the plating process. Electrolytic plating is distinguished from, e.g., mechanical plating, in which metal is applied to a substrate by application of a mechanical force. In electrolytic plating, a transfer of electrons causes a metal ion in the plating bath to be reduced from its ionic state (M^{+n}) to the free metal state (M^0) through which metal M becomes deposited on the substrate. In *electroplating*, this

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transfer of electrons results from the applied (or impressed) electric current. In *electroless* plating, this transfer of electrons results from the oxidation of a reducing agent in the plating bath. In *immersion* plating, this transfer of electrons results from the oxidation of metal on the surface of the substrate that is being plated due to a natural difference in electrolytic potential between the two metals, using *neither* an impressed electrical current *nor* a reducing agent. Thus, the differences between these types of electrolytic plating are quite fundamental - different in each of chemistry, driving force and type of deposit.

This understanding of the term "electrolytic plating" is reflected in US 4686017, in which, at col. 1, line 10-16, the following statement is made:

A variety of electrolytic methods are widely employed to deposit metals on or remove metals from conductive substrates for a variety of purposes. Electrolytic plating, including impressed current and sacrificial (immersion) plating, is used to produce decorative coatings

Thus, the parenthetical in the Abstract of US 4696017 does not mean that immersion plating is a subset or species of electroplating. Rather, the parenthetical refers to the antecedent "electrolytic methods" or "electrolytic plating", and indicates that immersion plating is another electrolytic method, together with electroplating. Applicants submit that no person of skill in the art would think that immersion plating is a species or subset of electroplating. The contention that this is so is clearly erroneous.

Thus, immersion plating is *not* a species or subset of electroplating. It is a species or subset of the more general "electrolytic" plating and is recognized in the art as fully distinct from electroplating. This distinction is supported by the Examiner's own example of the classification manual, in which 205/80 is entitled ELECTROLYTIC COATING, and which includes a variety of techniques including both displacement coating and various types of electroplating (the latter ignored by the Examiner in the Advisory action).

Regarding the Examiner's suggestion that immersion plating might be an inherent property of electroplating baths, this is erroneous for similar reasons. The teachings of US 3928147 recognize that under some conditions, i.e., with some chemistries, copper is capable of immersion plating on zinc, and that this is to be avoided. See, for example, col. 1, lines 22-26, which teaches that chemical deposition, i.e., immersion plating, of

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copper on zinc is to be avoided because the deposited copper film has poor adhesion and uniformity. US 3928147 goes on to teach that by adjusting the chemistry, the desired electroplating can be obtained.

US 3928147 also indicates in the table at col. 2 that zinc is capable of immersion plating on aluminum. However, this is not Applicants' claimed invention, which includes a number of other features, most notably a zinc alloy, a specified pH, fluoride ions and an inhibitor. The fact that some metals can be applied by both electroplating and immersion plating does not equate the two nor does it mean that one is inherent in the other nor does it necessarily extend to alloys. (In this regard, Applicants note that "Inherent anticipation requires that the missing descriptive material is 'necessarily present,' not merely probably or possibly present, in the prior art." *Trintec Indus., Inc. v. Top-U.S.A. Corp.*, 295 F.3d 1292, 1295, 63 USPQ2d 1597, 1599 (Fed. Cir. 2002).

For all of the foregoing reasons, Applicants respectfully request that the Examiner's rejections of Applicants' claims be reversed.

CONCLUSION

Based on the foregoing, Applicants respectfully submit that the Examiner's rejections are without basis since the contended factual bases are clearly erroneous.

It is believed no additional fee, beyond the Notice of Appeal fee, is required for this filing. However, if any fee is required, please charge the fee to Deposit Account No. 18-0988, Order No. ATOTP0104US.

Respectfully submitted,
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